

JPRS 78322

17 June 1981

# USSR Report

TRANSPORTATION

No. 48



FOREIGN BROADCAST INFORMATION SERVICE

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USSR REPORT  
TRANSPORTATION

No. 48

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AIR

## MOSCOW'S NEW AIR TRAFFIC CONTROL CENTER

Moscow VOZDUSHNYY TRANSPORT in Russian 16 Apr 81 pp 1, 3

[Article by S. Omelchenko and V. Torishniy, correspondents: "All Seeing Eye of the System"]

[Excerpts] Important event: Aeroflot aircraft have begun to receive commands from the air controllers of the new Moscow Automated Air Traffic Control Center over an enormous territory of 700,000 square kilometers.

It was only recently that all control of air traffic of the three largest regions was concentrated in the operational hall of the Moscow Automated Air Traffic Control Center. The subdued lighting, the entire situation in the hall, designed to create an atmosphere of calm cooperative labor, cannot even begin to conceal the carefully hidden but nevertheless noticeable emotion of the participants. The joke is told: a road long in years leads to these minutes.

The center's coming to life was preceded by enormous labor in the design, construction, complex testing, mastery and training of the servicing specialists of the Moscow Transport Administration and the Scientific and Experimental Center for the Automation of Air Traffic Control, the Capital Construction Administration, the Central Radio-technical Equipment and Communications Exploitation Administration, the Main Administration for Orders of Series-Produced Aviation and Ground Equipment, the State Planning and Surveying and Scientific Research Institute "Aeroprojekt" and the organizations of other ministries and departments.

### The Computer's Melody

The squat building rising at the edge of the Vnukovo Airport complex, even from afar creates an impression of something unusual. It may be because it has none of the usual alternating entrances and windows and maybe because the fan blades of an air intake device can be glimpsed fleetingly on the roof. In any case, it is not simply a certain architectural refinement, but a strictly functional circumstance caused by the function of the structure. It is literally the beginning of all sorts of electronic equipment. In the gallery, which is so long it could be used for track and field athletics training, the silence is not broken by even the squeak of a door. Everything here is subordinate to a common goal--the creation of ideal conditions for air traffic control, even the strict duty officer at the entrance who warns everyone trying to go inside wearing outer clothing. This measure is caused by necessity. The electronic

insides of the instruments used in the Moscow Center are so sensitive that even a minimal disruption of the parameters of the microclimate is capable of negatively affecting their operation. The air which enters the center passes through an entire cycle of preliminary processing. It is filtered and humidified and special sensors continuously monitor its condition.

--When someone smokes in this room or spills some sort of runny liquid on the floor--says the representative of the system engineers group, Aleksandr Khabarov--the equipment immediately senses this. Just look: a mass of information is digitally stored on these magnetic disks. To the uninitiated a comparison with a record player arises. Yes, in rough approximation, it is similar. With the only difference that the "melody" carries data on the schedules of aircraft traffic and on the rules of its separation in the air, and on what actions the computer directs the other equipment to take in the case of an extreme or complex situation. All of this is the result of the work of many specialists. There is program software. In it, graphically expressed, the system brain is concentrated, without which none of the equipment we saw is capable of assisting the controller.

The movement of large and small aircraft is controlled by the specialists of the air traffic control center from take-off to landing, providing traffic safety in the air. The fifth ocean is becoming crowded--in the last several years alone, new high-speed aircraft have entered the routes, the demand for air transport is increasing and its volume has grown. It is becoming ever more complex for the air traffic controllers. True, equipment assists them. In this very same Moscow zone, where approximately 60 airplanes pass through the sector in an hour, the most modern radars are installed. But, even just yesterday the air traffic controller specialists who work here were forced to direct approximately half of the aircraft coming into the airports of the capital to circle. Even working to the maximum of their capabilities, qualified controllers were simply unable to analyze the situation and to make the optimal decision which would have provided direct descent of all the aircraft into a landing with absolute and unconditional safety.

#### Who Helps the Controller?

Elementary arithmetic calculation shows that there are many more specialists assigned to provide uninterrupted operation among the personnel of the Moscow Automated Air Traffic Control Center than controllers. But this is understandable. The controller is the main figure. Order on the air routes depends on his knowledge, experience and reaction speed. But in order to free him from routine operations and to make it possible for him to completely dedicate his time to his direct responsibilities, the engineer-technician group must maintain the equipment at a level which is embedded in the design by the requirements of life itself.

Yuriy Zaselskiy, the senior engineer of the communications service of the Moscow Automated Air Traffic Control Center told how his colleagues trained for the responsible moment of the opening of the center. A multitude of documents were read--instructions, recommendations, special books and publications. Many times the engineers and technicians had to be driven from their work positions in the literal sense of the word. Their work was so fascinating, not to mention responsible. And why was that? It is a clear matter that the development is accompanied by the greatest difficulties, but that which faces the personnel in the exploitation process of the center can in no way be called a simple matter. The responsibility for all the data transmission channels lies on the service, as well as loudspeaker, land line and radio communications.



And today, it seems that the simplest actions of the communications specialists served as the final feature which put the controllers on the air at the moment of the opening of the center. Zaslavskiy forced the plugs which sparked over the contact and the loudspeaker communications were in operation. Somewhere at another point specialists connected previously disconnected terminals and the center obtained the capability of receiving radar signals, translated by computers into a language which may be used in operation, and then came the controllers.

So that the controller may guide the movement of the aircraft without interference--the senior scientific co-worker of the Scientific and Experimental Center of Automated Air Traffic Control, Aleksandr Stulov says--the technology of its activity must be adjusted to the finest details. Our section, which is headed by Anatoliy Fedorovich Petisov, accomplished enormous work in this direction. We participated in the design of the center, in the system acceptance from the manufacturers and in the compilation of the appropriate instructions. The last test of system operation was also the responsibility of the workers of our section. The crews of the technical testing panel must accept this responsibility in the future.

Today the complex automation of the air traffic control processes made it possible to increase the throughput of the Moscow Zone, the on-time scheduling of flights and their safety.

This is achieved thanks to the automation of the processes of collection and processing of radar information and information on the flight plans with the help of the latest computer and its presentation to the controllers on indicator screens, installed at the work positions.

The controller now has at his disposal a sufficient time reserve to solve control questions.

Regional (route) and air center automated systems are included in the Moscow Automated Air Traffic Control Center. The first provides control of the movement of large aircraft in the routes and outside routes within a region with a total area of 700,000 square kilometers, which includes the former territory of the Gor'kiy, Voronezh, and Vnukovo regional centers. The radars create a continuous zone of radar coverage in the boundaries of the controller region above altitudes of 3,000 meters. Dual and triple radar overlap is provided over the basic part of the region. If one of the radars breaks down, the automated system, without interruption, will begin to process information from another radar.

A flow organization group was created for the first time in our country in the Moscow Center, whose task is to model the aerial situation in the Moscow Zone. The specialists of the group must regulate aircraft movement during work with the schedule and the flight plans.

Automation of the aircraft movement control processes is being conducted in our country according to a plan developed and approved back in 1972. Automated systems in the airports in Mineralnye Vody, Leningrad and Kiev speak well for this. They were first introduced in the regions with the greatest traffic load.

The means of automation noticeably facilitate man's labor. But automation presents increased requirements for the training level of the specialists. Training programs are especially developed for them. Practice in system trainers, including the trainer in the Moscow Automated Air Traffic Control Center, assists the controllers in developing the required skills.

Several chairs, placed in a row in front of the indicators and the electronic control panel, are the work position of the organizational group which is headed by the senior engineer Viktor Tishkin. If a fault arises on any of the controller panels, the controller shift engineers may, without, moving, conduct a most hair-splitting inspection. That is, they may examine in detail the "picture" in the malfunctioning indicator, explain the cause of the breakdown and transfer the controller's work to a spare control panel.

But today nothing of the sort happened. The Moscow Automated Air Traffic Control Center began operation exactly on time.

Today our country is developing new airport, air filter center and enroute automated systems which are planned to be introduced in the territory of the Northern Caucasus, the Leningrad and the Ukrainian Administrations. The controllers of the Privolga Administration (the Kurumoch Airport) and the Simferopol Airport will receive the new equipment for air traffic control in this five-year plan.

The future will see the complete automation of a complex critical sector of the work of civil aviation--air traffic control.

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CSO: 1829/268



AIR

IL-86 'AIRBUS' SUBJECT OF CONFERENCE AT VNUKOVO AIRPORT

Moscow VOZDUSHNYY TRANSPORT in Russian 21 Apr 81 p 1

[Article by S. Omel'chenko, special correspondent for VOZDUSHNYY TRANSPORT: "Airbus: Reserves of Intensive Operation"]

[Text] A flight-engineering conference to study the results of the initial operation period of the IL-86 aircraft was held at Vnukovo airport. Officials of the ministry, the design bureaus, the Moscow Transportation Administration, flight specialists, engineers, and also representatives from the Ukrainian and Northern Kazakh administrations and the Central Administration of International Air Transport participated in the conference. In the near future these organizations must master and operate the airbus.

The IL-86 began transporting passengers at the end of last year. During this time the aircraft has fulfilled all planned flights to Tashkent and Mineral'nyye Vody.

All specialists unanimously remarked on the high regularity of the flights that it made. The airbus is comfortable for passengers and convenient for aviation specialists to maintain.

The training of flight specialists is done at the training subunit of the Moscow Transportation Administration and a subunit of the IL-86 aircraft, where an equipped classroom and even a trainer are used for these purposes.

The flight specialists emphasized that the usefulness of the training flights is enormous. But the trainer does have shortcomings, which, by the way, can be eliminated. The trainer's cabin resembles the very first IL-86 aircraft, but more recent models have different layouts brought about by refinements in equipment. This complicates the training of crews, particularly during the development of their actions in actual flight conditions. And another problem. The trainer can only simulate a landing situation at three airports. The pilots have expressed their desire to expand its capabilities.

The aircraft design permits the crew to perform flights without the need for a navigator. His duties have been divided up among the crew members, and automatic equipment makes it possible to make a flight with a three-man crew.

The flight crew of the subunit is able to solve this task on the basis of its professional skill and experience. All of the specialists who fly on the IL-86 have the highest professional and special training.

The chief of the Moscow Transportation Administration, V. Yudashkin, in discussing the experience of operating the airbus, noted the enormous amount of work that has been done by the engineering and aviation service. At the aviation equipment base they have organized two shops for servicing the IL-86. The personnel are successfully fulfilling all regulation work and are searching for and finding ways to reduce the idle time of aircraft in maintenance. Specialists from the Special Design Bureau are providing a lot of help in this, as are specialists from the Ministry of the Aviation Industry and the State Scientific-Research Institute for the Operation and Repair of Aviation Equipment.

At the conference progressive methods for aircraft maintenance were discussed, and the need to strengthen attention and control of management over the expansion of the use of the airbus was noted.

The IL-86 has been assimilated by the service that organizes shipments. However, for now the registration of passengers takes too long-- nearly two hours. The lack of an adequate amount of mechanization equipment and the poor quality of their manufacture are also slowing the work of the shippers. At Vnukovo airport there are only experimental models of prime movers and self-propelled container handlers and container carts. The equipment breaks down frequently, there is clearly not enough of it and at many airports which are getting ready to receive the airbus there is no equipment at all.

The practice of operating the IL-86 aircraft has shown that new equipment requires a qualitatively new approach to its maintenance and new work methods. The engineering-aviation service also needs special equipment and attachments for maintaining the airbus' equipment.

The new aircraft has special requirements for airport cover. It must be of a high quality and correspond to specific requirements.

At the conference the flight specialists raised the question about the interrelationships of the IL-86 crew with the dispatchers who control air traffic. The flight and technical features of the new aircraft, which complicate its maneuverability, require the increased attention of the air traffic controllers.

Up until now the IL-86 aircraft has made flights with a partial commercial load, taking on board from 250 to 300 passengers. At the conference they discussed the possibilities of increasing this amount. The specialists concluded that, while observing specific rules, they can now begin making flights with a full commercial load of passengers.

An analysis of fuel expenditure, that was performed by workers at the State Scientific-Research Institute of Civil Aviation, demonstrated that the fuel remainders significantly exceed the required air navigation supply. This leads to an increase in the flight weight of the aircraft, is detrimental to the commercial loading, and leads to an overexpenditure of fuel.

The prospects of using the IL-86 aircraft for domestic and international air routes are great in the opinion of the conference participants. In the near future the range of its flights will be considerably expanded.

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CSO: 1829/244

AIR

## CIVIL AIR VISIBILITY DISPLAY UNITS CRITICIZED

Moscow VOZDUSHNYY TRANSPORT in Russian 21 Apr 81 p 3

[Article by V. Golovin, weather instruments engineer, Magnitogorsk: "Instruments Must be Accurate"]

[Text] We frequently hear the opinion that the visibility display units (VDU) significantly underestimate actual visual observations and therefore are more of a hindrance than a help in supporting flight routine and safety. If the instruments are installed correctly, well-tuned and well-maintained, they can be relied on 100 percent. It is true that they do sometimes underestimate visibility, but this is caused by reasons that have nothing to do with their design or the purpose of their functioning.

At present VDU equipment is installed in shielded boxes, which are manufactured locally from available materials. Sometimes these boxes have grooves through which dust collects on the protective glass of the instrument. The same thing happens with the shielding box of the reflector. The visibility display units are installed along the landing and take-off strips, and, sometimes, a headwind blows into the windows of the box; the protective glass of the instruments and the lenses are drenched with rain or covered with snow. As a rule, when there is little or no wind, in fog, light rain and snow, the instruments operate reliably and provide readings identical to the actual visual observations. But when there is a strong wind and precipitation, they begin to underestimate visibility.

To eliminate this problem at Magnitogorsk airport we have installed ventilators above the windows inside the boxes to blow away any dust or snow from the windows. This considerably improves the operation of the instruments. But just as before the reflectors have to be cleaned when there are headwinds. As a result when the instruments are especially needed, it is necessary to switch to visual observations. To eliminate such shortcomings it is apparently worth manufacturing shielded boxes at a plant that are similar to supports for radio equipment for the airports of local airlines. The needed equipment could also be installed in the boxes in plant conditions, while ensuring the hermetic seal and preventing precipitation and dust from collecting on the windows. It would be a good idea to supply the box with skids approximately one half meter in height so that the box can be moved to keep the windows free of snow during storms.

The VDU instruments are manufactured, installed and serviced by the Goskomgidromet [State Committee for Hydrometeorology and Environmental Control]; the shielded boxes and supports under the reflectors are under the supervision of the Ministry of Civil Aviation. Thus this matter must be solved jointly by these two organizations.

AIR

## IL-76T IN OPERATION

MOSCOW GRAZHDANSKAYA AVIATSIYA in Russian Mar 81 pp 12-13

[Article by Yu. Grachev, commander of an Il-76 aircraft unit: "On Board--Urgent Cargo"]

[Text] Our flying unit operates the Il-76T transport aircraft. We are proud of the fact that an honored task fell to our collective--to give the flagman of cargo transports its flight pass. Our northern routes have become a stern test for the new aircraft and a hard taskmaster for the flying and the engineering technical crew. Both the people and the aircraft have successfully passed this test.

Now the operational-production testings are behind, and the routes for the dropping of cargoes of extreme necessity to geologists, to researchers and to builders have become the norm for us. The routes of the Il-76 are dictated by national economic tasks. We fly into the hottest spots in Tyumen'--into the petroleum and gas centers of Nadym, Novyy Urengoy, Krasnoselkup, Kharasavey, Novoagansk and others.

Moreover, we fly into the polar regions, north of the Krasnoyarskiy Kray and Yakutiya and to Chukotka. In some months the crews of the Il-76 each transport 6,000 tons of cargo urgently required for the national economy. Thus, in October of last year, we reached a record monthly norm of 6,523 tons. Our best crews of P. Zezyulin, V. Kuznetsov, A. Pleshakov and others exceeded the planned flight efficiency by 20-25 percent. It should be noted that operations were conducted, as a rule, on sod- and snow-covered airfields, in complex weather conditions with severe drops in temperature.

We will continue to further study the capabilities of using this remarkable airplane with the maximal effect, especially its cargo capacity. We still must do much more in the implementation of measures to reduce the fuel expenditure through the rational exploitation of the aircraft. The tone in the campaign for savings and economy is given by our veterans--those who first lifted the Il-76 into the sky of Tyumen'. It was at their initiative that the construction books with recommendations for reducing the expenditure of aviation fuel in a particular part of a flight were created. They take into consideration the most beneficial altitudes, take-off into the flight direction, direct landing, the most beneficial engine operating conditions, etc. The skillful use of the recommendations and



personal search for ways to save aviation fuel assisted the crews of G. Volokitin, A. Pleshakov, B. Kuznetsov, B. Lukin and A. Cherkashin in achieving a significant savings in kerosene in the 5-year plan.

Great and critical work awaits us. And we are firmly convinced that we will successfully deal with the assigned tasks.

#### PHOTO CAPTIONS

1. The work of the navigator is important and critical in flights in the regions of Siberia, the extreme North and Zapolyarya. For each such route A. Kondratenko, navigator of the Il-76T aircraft, prepares as if for the first and for the most important flight. The young aviator continuously increases his professional mastery and successfully studies in the Academy of Civil Aviation.
2. Yu. Krivko, an approach controller, achieved the honored title of Best in the Profession in competition with the controllers of the Tyumen' Flight Traffic Control Service.
3. The youth collective of the Tyumen' Air Technical Brigade which services the Il-76T are outstanding laborers. Recently the graduates of the aviation technical schools of Aeroflot, A. Zemskiy and V. Anosov (from right to left) completely mastered the service of all systems of the aircraft.
4. In a specialized laboratory for on-board systems of automatic control, rationalizer work is well in hand. In the previous year alone the aviators introduced more than 60 rational proposals with a savings of a total of 40,000 rubles into production. In the picture: Senior engineer V. Khrenov, technicians N. Antonov and V. Tarasyuk adjusting the Il-76T aircraft navigation systems.

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CSO: 8144/1075-A



AIR

## IL-76 REPAIRS COMPLETED

Moscow VOZDUSHNYY TRANSPORT in Russian 12 May 81 p 1

[Article by I. Pankeyev, special correspondent: "The IL-76: On the Route Again"]

[Text] An Important Event

There is hardly any reason why the repair workers of the 402nd Factory should be surprised by the sight of an aircraft taking off. But the IL-76 taxiing on the take-off runway attracted the attention of a multitude of people. It seemed that the whole collective of the factory was completely gathered here--watched the take-off of the enormous airplane with unconcealed interest. This first-born of the family of the "seventy six" shakes, as if from impatience, ready to dart off and rush along the runway, ever increasing its speed.

While the concrete runway spreads under the airplane's wheel rubber, hundreds of stares accompany the airliner. Here at the factory, everyone remembers the day when the airplane came from Tyumen'. It was a solemn meeting. But solemnities are solemnities and after several days it literally seemed 'hat the concern was a little more than anticipated. For instance, the aircraft had such a wing span and such a height that it simply would not fit in the hangar. The wings had to be removed and the plane had to be rolled almost flush up against the walls.

The trained factory workers saw a symbolism in the fact that the aircraft arrived at the factory exactly 20 years after the collective began repairing one of the newest (at that time) aircraft, the Il-18. Exactly 20 years to the day.

The repair of a new aircraft is always an event. Many things must be studied and mastered. Vitaliy Viktorovich Makarov, for instance, led the repair of the new aircraft for almost the entire time. And as to how he liked studying the new one, he spread his hands and with a smile said--very much! And the "very much" in this case is added to the 17 years of work, mechanical experience and knowledge acquired in the institute. The systems and subsystems of the aircraft do not become clear by themselves--their fine details must be investigated in order to understand them. And tens of workers, having repaired the Il-76, investigated, followed the work of the specialists of the construction factory, the special design office and they themselves acquired the first, but strong skills.

The repair of such a giant requires specialists from many professions with high qualifications. Those such as possessed by the riveter V. Demkin, the engine specialist I. Gretskiy, the testing foreman N. Silin and the head of the Technical Testing Office A. Virgun. Thanks to the selfless labor of the specialists, the aircraft was assembled and readied for testing in 10 days. Even representatives of the construction factory, who thoroughly know their creation and its peculiarities, were surprised by the record times and the high quality of the repair.

--There is so much effort invested in it--said L. Gorokhova, the paint foreman, about the airplane--that we would recognize it among hundreds of others. It has actually become one of the family to us.

Yes, it became one of the family. Quarterly, monthly, weekly and even daily graphs, daily testing of the accomplished tasks, such rates were introduced into the daily order for the first of the series. Sometimes it was necessary to work in two and even in three shifts, returning home only towards morning. But the awareness of the factory workers is the best controller and the best agitator. They knew what was required and worked without unnecessary questions. The basic principle was: there are complexities in everything; our problem was to overcome them. They were overcome. The roll-out of the second Il-76 aircraft onto the take-off runway will be a worthy gift by the workers to their enterprise for the 50th anniversary of the factory.

The repair of the first aircraft is completed. There were organizational difficulties in its process, there was not enough work area and orders were not filled. Even in general the Il-76 is a quite complex aircraft and even more so the first for the factory workers. Therefore, they now look at it with unmasked pride. Say what you will, but no one can remain indifferent to the first flight testing after the repair. For A. Abrashov, the head of the leading works, one of the oldest factory workers, in 28 years of work these are not the first or even the hundredth tests--he has seen even more of them. But as he himself said watching the aircraft taking off, "It is a new matter, a new success--a new joy."

It is difficult to understand how much or how little man needs for happiness. But a favorite work is absolutely essential. And then each labor victory will be joy. This is how it is for the collective of Factory No 402, having given second life to the remarkable airplane under whose wings the green sea of the Tyumen' woods will again stir.

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1829/267

AIR

## MI-8 HELICOPTER CREW HONORED

Moscow GRAZHDANSKAYA AVIATSIYA in Russian Mar 81 pp 12-13

[Article: "Test of Maturity"]

[Text] Paraphrasing a famous saying, it is possible to affirm with a great deal of conviction: tell me who your teacher is and I'll tell you who you are. The young commander of the Mi-8 helicopter from the Berezovo Aviation Enterprise, Vladimir Kusenko, had a good instructor--an experienced commander and a competent teacher, the communist Ivan Vasilyevich Krivoruchko. In practical training, he showed how to pick out a landing pad from the air, how to transport cargo on the external strap; he trained him in night flying. The senior man taught the younger to develop such qualities as foresight, self-discipline and high demands both on himself and his crew, qualities without which it is impossible to be an authoritative leader of even a small flight collective. And, it must be said that the efforts expended by the teacher were not in vain.

V. Kusenko's crew took part in the construction of the Urenga-Chelyabinsk, Medvezhye-Punga-Vuktyl pipeline, in the construction of the "Pripolyarnaya," "Sorunskaya," the "Tobolskaya" compressor stations and labored as well on other structures of shock Komsomol construction. And the crew fulfilled its production tasks everywhere with an excellent rating.

Especially complex were the flights around Tobolskiy, where a compressor station was constructed. The cargos were loaded directly from the water, from the Irtysh. At that time the river had overflowed its banks, and all the approaches to the wharves were flooded. There was not even a place for a helicopter to land. And the crew had to take on metal constructions, reinforced concrete plates and pipes directly from barges.

"This was a sort of exam for the young Komsomol crew. A test of professional maturity and coordination. And the crew passed it with honors," said the commander of the aviation enterprise V. A. Zaykov.

Kusenko himself characterizes his workmates as follows: "Our modest successes are the result of each crew member's conscientious regard to our obligations. The copilot Vyacheslav Barkovskiy finished school only 2 years ago and requested assignment to Berezovo. After a month of probation, he was assigned as copilot to my crew. I immediately found a common language with him. By the way, we

both had I. V. Krivoruchko's teaching behind us. Barkovskiy is a promising pilot. I am convinced that he won't remain in the copilot seat for long and will soon be a helicopter commander. And the flight engineer, Nikolay Bolshukhin, is our Komsomol organizer. He is an educated specialist. Three years ago he worked as an aviation mechanic and then retrained for flight engineer. You fly confidently with him; you don't worry about the technical reliability of the machine.

In the 10th Five-Year Plan the Berezovo Aviation Enterprise fulfilled the planned volume of operations for the service of the national economy ahead of time. The highest flight hours in the branch are achieved here in the assigned Mi-8 helicopter. In the achievement of the collective there is a share of the labor of the crew of V. Kuksenko, which actively participated in the socialist competition for the honored coming of the 26th CPSU Congress.

For high indicators in the All-Union Socialist Competition to increase the effectiveness and quality of the operation of the Mi-8 helicopter, the crew, consisting of the commander, V. I. Kuksenko, the copilot, V. Yu. Barkovskiy and the flight engineer, N. N. Bolshukhin, was awarded the Outstanding Red Banner of the Central Committee of the All-Union Lenin Young Communist League, "Heroes of the Five-Year Plan, Veterans of Labor and the Best Young Komsomol Collective." The crew is entered in the Chronicle of Komsomol Fame for 1976-1980, while its commander, V. I. Kuksenko was awarded the badge of the Central Committee of the All-Union Lenin Young Communist League "For Labor Prowess."

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## MOTOR VEHICLE

### EXPERTS REVIEW GENERAL SITUATION, PROBLEMS OF VEHICLE TRANSPORTATION

Novosibirsk *EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA* in Russian No 4, 1981 pp 33-81

[Round table discussion, materials prepared by candidates of economic sciences A. K. Bergman and A. P. Leont'yev: "The Work of Motor Vehicle Transportation - Goals and Results"]

[Text] The Moscow Highway Institute (MADI) and the editors of the journal *EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA* organized a round table meeting on the problem "Raising the Efficiency and Quality of the Work of Motor Vehicle Transportation."

The following persons took part in the discussion:

L. L. Afanas'yev - rector of MADI, doctor of technical sciences, and professor;

M. M. Basov - deputy chief of the division of transportation of the USSR People's Control Committee;

P. G. Bunich - chairman of the USSR Academy of Sciences' Scientific Council on the Comprehensive Problem "Scientific Foundations of Cost Accounting," and corresponding member of the USSR Academy of Sciences;

N. M. Vasil'yev - dean of the economics faculty at MADI, doctor of economic sciences, and professor;

D. P. Velikanov - sector head at the Institute of Comprehensive Transportation Problems of USSR Gosplan, and corresponding member of the USSR Academy of Sciences;

A. F. Dergachev - professor at MADI, and doctor of economic sciences;



V. N. Ivanov — director of the Scientific Research Institute of Motor Vehicle Transportation, doctor of technical sciences, and professor;

N. S. Korolev — deputy RSFSR minister of Motor Vehicle Transportation;

S. A. Panov — senior scientific associate at the Central Mathematical Economics Institute [TsEMI] of the USSR Academy of Sciences, and doctor of technical sciences;

P. S. Ulitskiy — chief specialist of the USSR State Committee on Labor and Social Problems, and candidate of economic sciences.

Academician A. G. Aganbegyan, editor-in-chief of the journal, conducted the meeting.

The discussion began with a statement by professor L. L. Afanas'yev, who said that orienting motor vehicle transportation to the achievement of final national economic results forces us to review many of our positions and ideas.

Let us begin with the question of the rational structure of expenditures for the production and operation of a vehicle. For example, the structure of labor expenditures for vehicles of the ZIL [Plant imeni Likhachev] family, the most widespread one, is characterized by the following figures for the full life of the vehicle: production — two percent; technical servicing — 35 percent; current repair — 54 percent; major repair (overhaul) — nine percent.

The ratio of labor expenditures for production of the vehicle and its capital repair attract attention. This is explained chiefly by the difference in levels of labor productivity in the use of spheres of production which result from many organizational, technical, and social factors. Although it takes greater expenditures, capital repair provides a shorter vehicle life than new production.

The idea of the wisdom of a certain increase in expenditures for production of the vehicle in order to achieve greater economy in use has been expressed many times. Today it is not at all enough to assume the obligation to increase the working life of a vehicle to 300,000 kilometers without capital repair; in addition, a definite level of expenditures for operation must be insured. In view of this, the automotive industry is assuming the obligation not just of producing motor vehicles, but also servicing them in the operations sphere.

New approaches should be taken to solving various other problems as well. A large share of the vehicles at transportation enterprises are wornout and obsolete, and writing them off would not harm the national economy. Moreover, the efficiency of use of the remaining vehicles could be raised. Vehicle transportation workers are unwilling to do this, because the level of wages for managers and engineering-technical personnel depends on the number of vehicles at the enterprise, not the volume of work performed.



Another example could be cited to illustrate the reasons for inefficient use of vehicles in motor vehicle transportation. In many cases the prices for motor vehicles are several times lower than prices for tractors. They try to use motor vehicles in places where only a tractor can do the job, and this wears out vehicles excessively. Too low prices for motor vehicles also lessen the incentive to repair them and make them durable.

Last year the CPSU Central Committee and USSR Council of Ministers adopted a decree entitled "Steps to Improve the Construction, Repair, and Maintenance of Highways in the Country." In this connection it should be said that slightly more than 40 percent of our roads have hard surfaces, and only two percent of them are figured for an axle load of 10 tons. Even they need a thicker road surface. Annual national economic losses resulting from poor roads reach more than 5 billion rubles in our country, which is more than double the amount of appropriations for road construction. Many more examples could be given that show the efficiency of a sharp expansion of highway construction oriented to the current level of development of motor vehicle transportation. Without this we will not get the maximum effect from use of the new, heavy vehicles. That is why the decisions of the CPSU Central Committee and USSR Council of Ministers on development of the country's highway system are so timely.

D. P. Velikanov, corresponding member of the USSR Academy of Sciences, continued the discussion. In his opinion, it is impossible to talk about the use of the reserves of motor vehicle transportation without also discussing the automotive industry. After all, the country's vehicle transportation enterprises are generally compelled to perform shipments not in those vehicles which would insure minimum expenditures, but rather those that are allocated to them. The indicators of the shipping plan are not calculated for the optimal (most expedient) structure of the motor vehicle fleet, but rather the actual structure (see table — editor's note). These assignments can be fulfilled and overfulfilled,

Table. Structure of the USSR Truck Fleet, % of total

Load Capacity, tons	Optimal	Actual
Less than 2	29	9-10
2-5	41	80-82
More than 5	30	9-10

and each enterprise will be among the leaders, but national economic costs will be unjustifiably high.

Special studies showed that 94 percent of all loose and bulk freight can be transported in larger trucks than those now used. To continue the present situation is like deciding to carry water from the well in glasses, not buckets.

Growth in the production of vehicles with large load capacity will have a significant economic impact. Replacing dump trucks with load capacities of 3.5-4.5 tons with trucks that can carry 12-15 tons of bulk and loose loads (dirt, crushed rock, and the like) would make it possible to reduce the number of drivers by one-half to two-thirds, to cut the prime cost of shipping almost in half, and to lower the cost of construction accordingly as the result of a decrease in the transportation component.

At the same time, the use of small vehicles should increase for hauling small loads in trade, domestic services, communications, and other sectors of the economy. It is more correct here to consider them technological means of the production process, a means of mechanizing labor. When these vehicles are used it is advisable to combine the duties of driver and shipping clerk, driver and supply agent, and the like.

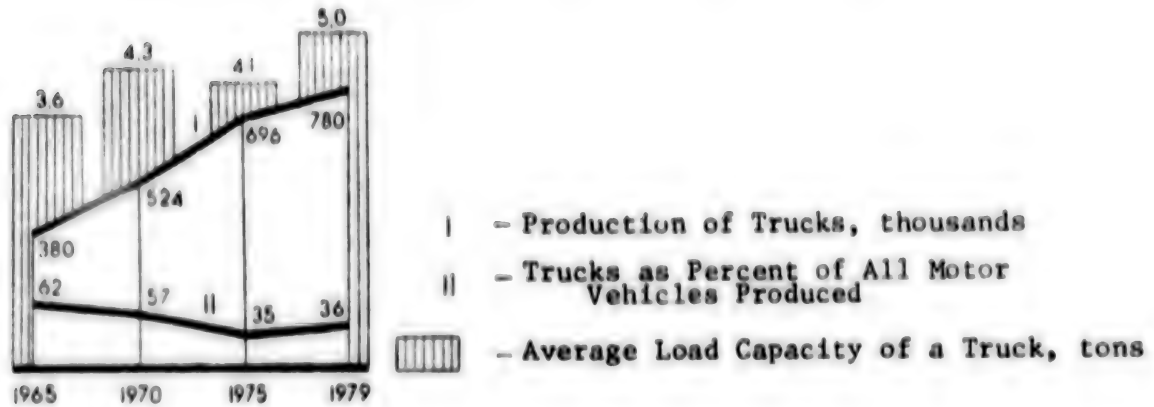
In many Western European countries and in the United States intercity vehicle shipping accounts for 80-90 percent of the total freight turnover of motor vehicle transportation, but in our country the figure is seven percent. Why is this? After all, it has been demonstrated that motor vehicles can deliver freight for distances of 300-500 kilometers several times faster than rail or water transportation. Switching loads being shipped distances up to 150-200 kilometers from rail to motor vehicle transportation would be equivalent to freeing working capital equal in value to the fleet of vehicles necessary for this purpose. And switching loads distances up to 50 kilometers to vehicle transportation could provide, additionally, a decrease in the need for working capital, a savings of roughly 500 million rubles on calculated expenditures for transportation of the loads, and freeing almost 100,000 persons employed in loading-unloading operations. This is especially important under contemporary conditions where railroad transportation, as noted at the November 1979 Plenum of the CPSU Central Committee, is not meeting plans for shipping the most important types of freight.

We must modify the practice of planning transportation costs for industrial enterprises so that the acceleration accomplished by delivering freight by motor vehicle in loads of 20-25 tons, which is advantageous to the national economy, will enable the enterprise to compensate for the transportation expenditures, which are higher (calculated per kilometer) than for other forms of transportation. We also need vehicles and tractor-trailer units that are figured for intercity shipping. The expenditures will be repaid manyfold.

Along with other comrades D. P. Velikanov called for ridding the fleet of "ancient" vehicles. The economic indicators of vehicles older than 6-8 years are sharply worse; they are the ones that truly devour spare parts and labor resources. In the ninth year of use, for example, the annual distance traveled decreases by more than 45 percent, productivity drops 32 percent, and the use coefficient of the vehicle fleet goes down more than 28 percent. In comparison with vehicles that have been operated for eight years, a vehicle that has been in use for 12 years requires an additional investment of some 1,000 rubles for repair facilities. How can we compensate for the decrease in the number of vehicles? In addition to realizing a savings from writing off vehicles, we

must eliminate the surplus of vehicles at some enterprises, especially in agriculture.

Production of Trucks in the USSR for 1965-1979



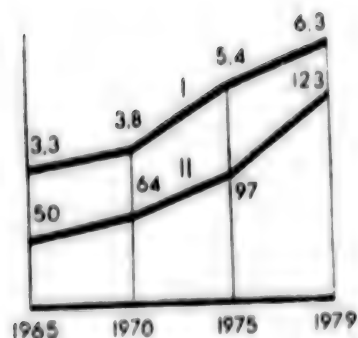
Professor A. F. Dergachev discussed the organization of vehicle repair work. A significant share of the vehicles are generally down awaiting repair. The length of use of vehicles that have gone through capital repair is 30-40 percent less than the first cycle before capital repair. The labor-intensiveness of capital repair of a motor vehicle is 30-50 percent higher than its manufacture. Operating costs are also rising. All these things testify to the need to reorganize motor vehicle repair work. At the present time it is spread out at hundreds of plants and thousands of shops belonging to different departments. Based on its level of technical equipment the vehicle repair system is not able to insure reliable repair, which ultimately costs the national economy billions of rubles a year.

How can we escape these losses? In the first place, we must improve the design of the vehicle, increase its reliability, reduce the scope of current and capital repair, and free the hundreds of thousands of persons engaged in this work. In the second place, the semiprimitive repair enterprises must be replaced by highly concentrated vehicle repair facilities with appropriate technical equipment and a high level of mechanization and automation of labor, which will guarantee output similar in quality to that of the automotive industry. If the automotive industry were to organize repair work, it would bring in its production sophistication and get exhaustive information on design and technological errors in the manufacture of the new vehicle. This would make it possible to prolong the life of the elements and assemblies of the vehicle, reduce the need for spare parts, and use metal economically in production and repair.

There are numerous scientific studies that confirm the wisdom of concentrating technical servicing and current repair in the operations sphere. It is possible

**Volume of Shipping and Freight Turnover of USSR General-Use Motor Vehicle Transportation in 1965-1979:**

I - Volume of Shipping, billions of tons; II - Freight Turnover, billions of ton-kilometers

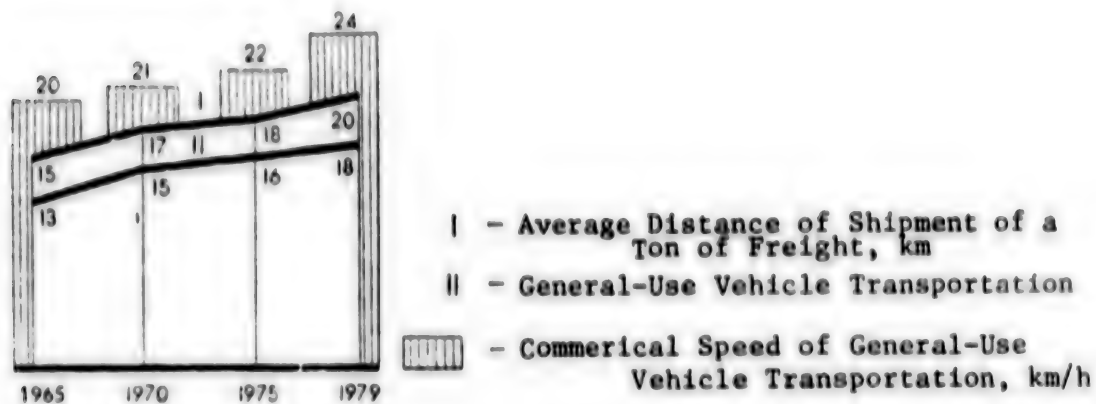


**Note:** The share of general-use motor vehicle transportation in the total freight turnover of motor vehicle transportation in the national economy was 35% in 1965 and 29% in 1970-1975 and 1978, while its share of freight shipped was 31% in 1965, 26% in 1970 and 1975, and 27% in 1978.

here to decrease labor-intensity, improve quality, and use material resources economically. But it is necessary first to substantiate the criterion by which a vehicle must be sent for capital repair before it becomes unrepairable. It is also necessary to establish job specifications and scope for technical servicing and current repair at garages.

Doctor of technical sciences S. A. Panov stated with regret that the sequence "storage - freight - batch of freight - container - forming complete sets - truck bed - loading - means of transportation - unloading - breaking up complete sets - storage" is broken at many points by different technology, departments, and departmental interests. The primary production activity of motor vehicle transportation is performed in an environment external to it. Therefore, the study of shipping in isolation does not give adequate grounds for a correct selection of shipping goals and criteria. The management of shipping must be studied and refined within a system of a higher order that is involved in the entire cycle from creation of the finished product until its use by the customer.

**Average Length of Shipment of One Ton of Freight and  
Commercial Speed of General-Use Vehicle Transportation  
in the USSR in 1965-1979**



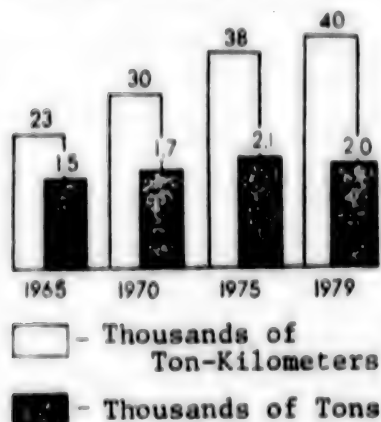
Irrational organization of the interrelations between delivery and transportation leads to the appearance of profitable and unprofitable routes, loads, and customers. The usual loser in this is the national economy. When evaluating the efficiency of work of subdivisions that deliver freight with a shortage of means of transportation, it is hardly necessary to strive to maximize profits or minimize transportation costs. It is more correct to minimize the total loss from failure to deliver national economic output. This indicator demands a painstaking classification of freight being transported from a national economic standpoint and an objective evaluation of the work of transportation organizations operating under different conditions.

Professor V. N. Ivanov recalled that the 25th party congress emphasized the need for accelerated development of the infrastructure, including the transportation system. The first thing that we must do is to determine the national economy's need for shipping and compare it against the actual state of transportation. This is the only basis that will make it possible to rationalize the structure of the country's entire transportation fleet, including reducing the excessive number of persons employed in motor vehicle transportation, limiting the volume of transportation services by customer sectors, and optimizing the intersectorial balance of use of means of transportation. Such a policy would make it possible to improve all the indicators of vehicle transportation efficiency and raise it to the level of the industrial sectors. These are difficult problems, and they cannot be solved without the participation of scientific institutions, including the institutes of the Academy of Sciences.

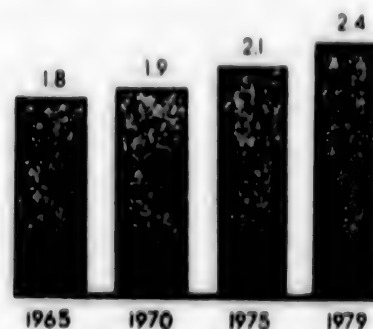
Deputy minister N. S. Korolev emphasized that discussion of the problems involved in the development and functioning of motor vehicle transportation is timely and promising. Cooperation by specialists from different areas, fuller consideration



Productivity of the Trucks  
of General-Use Motor Ve-  
hicle Transportation for  
One Average Listed Vehicle-  
Ton in 1965-1979



Average Annual Number of Per-  
sons Employed in Shipping by  
General-Use Motor Vehicle  
Transportation in 1965-1979,  
millions of persons



of the new conditions of production and use of motor vehicles (including consideration of the scarcity of labor resources), and orientation to the interests of the customer and to national economic interests are all factors that will help raise the efficiency of work by vehicle transportation.

We want to make transportation an industrial sector, N. S. Korolev said. In connection with this we have already begun working on a large number of new problems, among them insuring a high level of technical readiness in the vehicle fleet. Most unfortunately, the vehicle repair zone is still considered a place to assign drivers as punishment. Drivers must be taken out of the repair zone and replaced by highly skilled workers who receive appropriate wages. We are also aware of the need for technical re-equipping of garages and will take steps to increase the working life of vehicles.

P. S. Ulitskiy of the USSR State Committee on Labor and Social Problems observed that motor vehicle transportation needs more drivers. But the sector cannot expect a significant increase in the total number of employees, so it is necessary to search for reserves within its own enterprises. For example, the scarcity of labor resources can be mitigated by reducing the average daily number of drivers who do not come to work, cutting downtime, improving cab design, and thus reducing the rate of illness. There must also be a significant improvement in the use of drivers. Agriculture has many motor vehicles. But the indicators of their use are 35-40 percent lower than in the general-use vehicle transportation enterprises. Technical servicing of vehicles and their maintenance, material stimulation for saving gasoline and spare parts, and similar activities are on a low level at agricultural enterprises. Representatives of the automotive industry and the ministry of motor vehicle transportation are disturbed by the work of vehicles in agriculture today, but people have become used to their



alarm. Statements by major scientific figures could draw serious attention to this important issue.

Many negative aspects of the work of motor vehicle transportation have been revealed and analyzed by the USSR People's Control Committee. M. M. Rarov, deputy chief of the transportation department of this committee, pointed out that even at Glavmonavtotrans [Main Administration of Motor Vehicle Transportation of the Moscow City Executive Committee] vehicle downtime for loading and unloading operations comprises an impressive proportion of their total working time: 35 percent for Mosstroytrans [Construction Transportation], 45 percent for Mospromtrans [Industrial Transportation], and 80 percent for Mostorans [Trade Transportation]. Waiting for loading and unloading operations takes several times longer than the operations themselves. This makes it plain that reducing such significant vehicle downtime is not a matter for motor vehicle transportation alone.

The vehicle transportation enterprise cannot exert pressure on freight shippers and receivers so that the place and time of loading-unloading work are clearly organized and defined in order to minimize downtime. The fleet of vehicles is developing, but the layout of freight yards remains unchanged. For example, the yard at the Kiev Freight Station has not been changed since 1910!

The RSFSR Ministry of Motor Vehicle Transportation uses about two-thirds of its capital investment to purchase vehicles and about one-third to build up the technical facilities of vehicle transportation enterprises; less than one percent is used to organize shipping. This structure is far from optimal. Other forms of transportation spend almost one-third of capital investment on the organization of shipping, and they receive a significant benefit.

The questions of development of motor vehicle transportation are closely interlinked with the problem of environmental protection. Professor N. M. Vasil'yev devoted his time to this subject. Emphasizing the importance of the problem, he said that maximum efficiency is accomplished not only where social and personal needs are satisfied the best way with minimal expenditures, but also when the least possible damage is done to the natural environment.

The negative ecological consequences of motor vehicle transportation operations are common knowledge: air pollution, noise, vibration, withdrawal of land for highways, the increased content of lead in the soil in highway zones, and so on. These things are particularly felt in the cities, whose share of the country's population is steadily growing. World transportation is the source of roughly 40 percent of the harmful substances discharged into the atmosphere. In the United States more than 85 percent of the carbon monoxide that contaminates the environment comes from motor vehicles.

The acuteness of the problem can be significantly mitigated by the production of electrical vehicles. The USSR has several dozen experimental models. But worldwide the number is more than 50,000. Widespread use of such vehicles (even in cities) is limited by their range (60-100 kilometers) and the difficulties of recharging their power supplies. Solving these problems will promote the development of electrical vehicle building. It is expected that the

number of electrical vehicles in West Germany will reach 2 million in 1983-1985, and by 1985 they will comprise 10 percent of the fleet of vehicles in France, West Germany, and Great Britain. Large-scale production of electrical vehicles is also contemplated in the United States by 1990. USSR industry also has the capabilities to begin series production of electrical vehicles which are inexpensive to operate. But before this is done we must expand the production of vehicles that use diesel fuel, stop using ethyl gasoline, improve the decontamination of exhaust gases, and introduce engines that work on hydrogen fuel.

Two ways are usually recommended to control the negative impact of motor vehicle transportation on the environment: fines or rigorous monitoring of the condition of the biosphere based on specially developed norms. Both are unsuccessful because their consistent application will lead either to the unfortunate necessity to put all motor vehicle transportation out of work or a situation where the vehicle transportation enterprises will be fined and pay for the mistakes of other departments (road construction, city planning, and the like). The answer should probably be sought in the formulation of sectorial norms and regulation of sectorial efforts to protect the biosphere. Further, it appears the time has come to develop and adopt a special transportation code. It would establish the rights and duties of the parties and regulate the ecological consequences of the development of motor vehicle use.

The rapid increase in the number of vehicles cannot be overlooked in the development of city planning. Methodological instructions for the development of transportation over the long run bypass ecological problems, and the employees of certain planning and administrative institutions do not give the matter adequate attention. The incentive to invest capital in environmental protection is diminished because expenditures to correct damage caused to the natural world and its impact are not included in accounting figures.

P. G. Bunich, corresponding member of the USSR Academy of Sciences, continued the discussion. He observed that at first glance the efficiency of motor vehicle transportation is determined by the revolutions of the internal combustion engines, but all of these factors do not operate by themselves. Rather, they are dependent on the "revolutions" of the economic mechanism. Therefore, that is where we must begin.

The 12 July 1979 decree of the CPSU Central Committee and USSR Council of Ministers intensified the incentive for industrial enterprises to adopt stepped-up plans. Wages will now be established by uniform sectorial norms per article. If a certain enterprise has a low plan, its wages fund will be reduced accordingly. Price supplements depending on the effect are established for the production of output of improved quality and efficiency (beyond the levels indicated in the plan). The more such output is produced (but this must be noted in the plan), the greater the incentive will be. Plan intensity is also promoted by the establishment of stable stimulation norms that "drop" together with control figures and are not adjusted after adoption of the plan. Special measures are envisioned to give encouragement to the adoption and performance of counter plans. Incentive for evaluation indicators is now produced

in the form of percentages of total calculated profit, so that calculated profit has also become an evaluation indicator. The job now is to develop and implement similar measures for transportation organizations.

The final speaker was academician A. G. Aganbegyan. He noted that a persistent theme of the discussion was the question: What is to be done to raise the efficiency of motor vehicle transportation? From the standpoint of the economist, this problem can be solved by improving planning, management, and stimulation.

The achievement of higher national economic indicators for the work of motor vehicle transportation depends primarily on the quality of the plan. If mistakes are made here, if resources are distributed incorrectly and the scientific-technical program for the development of transportation is incorrectly defined, all subsequent work, even with the most sophisticated organization and material stimulation, can only compensate for the inevitable losses. But it cannot fully correct the errors that were made.

Planning can be improved in many ways. Which is the main one? The party decisions particularly stress the importance of the target program approach. Until recently transportation has not been considered a single system in the country. Scattered, poorly coordinated measures have been planned, each of them possibly attractive, but not definitely providing a fundamental solution to the problem when taken together.

Our transportation statistics still do not show how much time it takes to deliver a load from the supplier to the customer. We can get information on the length of particular stages, but it is not complete for the entire process. Estimates show that unit freight travels (taking account of transshipment from one form of transportation to another, downtime, and the like) at the average traveling speed of a horse-drawn wagon.

The November 1979 Plenum of the CPSU Central Committee pointed to the necessity of working out a comprehensive program for the development of transportation, drawing on the best achievements of scientific-technical thought. "This program," Comrade L. I. Brezhnev said at the Plenum, "should cover the issues of development and interlinking all forms of shipping. It should aim at modernization of the railroads, faster growth in pipeline, river, and motor vehicle transportation, and mechanization of loading-unloading work. Special attention should be devoted to fundamental improvement of the organization of shipping and more rational planning of the shipping process." The formulation of a uniform program for the development of the country's transportation system will permit optimal solutions to specific problems of motor vehicle transportation as well. Unfortunately, there is no special agency which could control all the elements involved with the preparation and implementation of such a program.

The systems approach to the use of motor vehicle transportation also contemplates an appropriate orientation in the automotive industry. Before assignments are given to produce a motor vehicle, it should be established what kind of motor vehicle transportation we want to develop. Many very common types of trucks have rigidly fixed design features and can only be used in one capacity: stake-bed

trucks, dump trucks, tankers, and the like. But there is also another type of vehicle, which consists of two large units: the tractor and the semitrailer. There is no need for this vehicle to spend a long time waiting for loading and unloading; it only has to connect or disconnect the semitrailer, which has been prepared in advance. Needless to say, this makes the specialization of motor vehicle transportation easier, because it is easier to specialize semitrailers than stake-bed trucks.

The general prospects for the development of the automotive industry are also linked to broad introduction of diesel engines. Unfortunately, planning agencies are not devoting proper attention to this matter, so that in 1980 about three-quarters of the trucks are still using gasoline engines. There must also be a fundamental change in the structure of the truck fleet, a significant increase in the proportion of heavy-duty and small trucks while reducing the proportion of trucks of medium load capacity (at the same time the occupation of driver on these large and small trucks should be combined with other occupations at the organizations that use them). A corresponding change in technical policy and the planning of motor vehicle production could have a significant national economic impact.

We can say today that the organization of the production and repair of motor vehicles is about to undergo major changes. USSR minister of automotive industry V. N. Polyakov is properly raising the question of establishing large vehicle associations whose jobs would include not only the production of vehicles and spare parts but also technical servicing and repair stations. If each automotive plant itself did repair work, it would think carefully about which is more advantageous: to improve the quality of the vehicle or to spend enormous resources for the repair of poor vehicles. This would make it possible to eliminate the semiprimitive repair facilities.

Finally, improving the economic mechanism and correctly deciding social issues play an important part. A large number of more specific tasks in raising the efficiency of motor vehicle transportation can be accomplished in this way. Wages, incentive to save gasoline, overcoming the lack of personal accountability in transportation work and leasing motor vehicles in conformity with economic contract methods, discarding intermediate indicators, and providing incentive for workers and collectives for final results — the study of these issues and implementation of tactical recommendations on them offer us significant new reserves.

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## MOTOR VEHICLE

### FACTUAL REVIEW OF AUTOMOTIVE INDUSTRY PRESENTED

Novosibirsk *EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA* in Russian  
No 4, 1981 pp 45-50

[Article: "Facts and Figures on the Development of the USSR Automotive Industry"]

[Text] In conformity with the decisions of the 24th and 25th CPSU congresses, new automotive plants were built, existing enterprises of the sector were reconstructed, and scientific-technical and experimental design centers were expanded and strengthened. The Volga Automotive Plant which produces up-to-date cars has been built and already exceeded its projected capacity. The first phase of the Kama complex has been launched, and reconstruction of enterprises in the sector is continuing, including the Gor'kiy Automotive Plant and the Moscow Plant imeni I. A. Likhachev.

Production associations that produce trucks and cars and large specialized all-Union industrial associations to manufacture bearings, electrical equipment for vehicles, buses, trailer equipment, and the like have been formed. They are directly subordinate to the Ministry of Automotive Industry, and offer great opportunities for concentration, specialization, and collaboration in production. Within the association specialized enterprises have been organized to produce engines, fuel equipment, gear boxes, axles, crank shafts, electrical equipment, metal parts, wheels, brakes, and other vehicle parts and assemblies.

In the new five-year plan the Moscow Automotive Plant imeni I. A. Likhachev will increase the production of ZIL-133 vehicles with KamAZ [Kama Truck Plant] diesel engines. Total vehicle production will be maintained with an increase in the production of diesel tractor-trailer units.

The Gor'kiy Automotive Plant will begin building diesel tractor-trailer units with a load capacity of nine tons. The diesel engines for these tractors will be six-cylinder air-cooled engines. The production of GAZ-53A vehicles will increase concurrently with a slight decline in the production of GAZ-52 vehicles.

The Minsk Automotive Plant will increase its production of vehicles. A new basic model will be incorporated. The load capacity of tractor-trailer units will increase to 22 tons for double-axle tractors and 31 tons for triple-axle tractors. MAZ vehicles are to be equipped with new or modernized diesel engines from the Yaroslavl' Avtodizel' Association. Plans envision the development of production of trailers and semitrailers, including specialized ones for construction needs.

The Belorussian Automotive Plant will significantly increase the production of heavy-duty mining dump trucks. Plans contemplate the development and incorporation in production of models with load capacities of 110 and 180 tons. Dump trucks with load capacities of 27 and 40 tons will be modernized; they will have new engines and improved transmissions.

The Kremenchug Automotive Plant imeni 50-Letiya Sovetskoy Ukrainy will increase the production of vehicles and incorporate new models with increased load capacity. In particular, the capacity of the basic construction dump trucks will be raised to 16 tons. KrAZ vehicles will be equipped with new and modernized diesel engines from the Avtodizel' Association.

The Kama Association for the production of heavy-duty trucks plans to complete construction and incorporate capacities to produce 150,000 diesel trucks and tractor-trailer units and 250,000 diesel engines and to organize a network to supply spare parts and repair aggregates. Plans also envision incorporating the capacities of the plants that work in collaboration with the Kama Truck Plant. Among them are the Neftekamsk plant which produces agricultural and construction dump trucks, the Stavropol' plant which produces truck trailers, and the Krasnoyarsk plant which produces various types of semi-trailers, including specialized ones.

The Ural Automotive Plant will begin production of specialized agricultural vehicles with three and four drive axles and load capacities of seven and 10 tons. Trucks built for use on snow and marshy terrain with a load capacity of eight tons are to be produced. The total production of vehicles at the Ural Automotive Plant Association will increase. Diesel engines from the Kama Truck Plant will be installed in Ural vehicles.

The Ul'yanovsk Automotive Plant will produce modernized vehicles (cars, vans, and buses) with longer working life.

The Kutaisi Automotive Plant is preparing to produce a new agricultural tractor-trailer unit with a load capacity of 12 tons. It has a diesel tractor with two drive axles. The six-cylinder diesel engine is standardized with the family of Kama Truck Plant diesels.

The Zaporozh'ye Kommunar Automotive Plant plans to produce a new model of small front-wheel drive vehicle weighing roughly 700 kilograms. It will be equipped with an air-cooled engine with a working volume of one liter. The Zaporozh'ye plant will increase its production of vehicles.



The Volga Association for car production will increase the production of Niva vehicles which have four-wheel drive and are designed for work in agriculture. At the same time they will continue to produce VAZ vehicles with the "classical" design (engine in front, drive wheels in the rear). Production of the new 2105 model has already begun.

An increase in the production of buses is planned by reconstruction of existing plants and incorporation of new models. Kama Truck Plant diesel engines will be installed in large buses. The production of all classes of buses will increase: very small (at the Riga and Ul'yanovsk plants), small (at the Pavlovsk and Kurgan plants), and medium and large (at the L'vov, Kurgan, and Likinskiy plants).

An important challenge for the automotive industry is to build capacities to produce trailers for heavy tractors (by construction of the Orsk plant and reconstruction of the Balashovo, Chelyabinsk, and Frunze plants).

The automotive industry also concentrates plants that produce roller bearings supplied to all USSR machine building. Plans call for an increase in the production of precision, railroad, large, and other special types of roller bearings. The production of electrical equipment and instruments for motor vehicles and tractors will increase in the sector.

All new models of vehicles are being developed with the intention of increasing their working lives. The plan figures will be 350,000-400,000 kilometers for medium and large capacity trucks; 250,000-300,000 kilometers for very small and small capacity trucks; 100,000-150,000 kilometers for very small and small cars; and, 350,000 kilometers for medium-sized cars.

Photo Caption: [Photo not reproduced] The vehicle assembly wing of the Moscow Automotive Plant imeni I. A. Likhachev has begun assembling the new ZIL-133 GYa trucks with load capacities of 10 tons and KamAZ-740 diesel engines. The photograph shows the first new ZIL-133 GYa truck.

REFERENCE: Izdatel'stvo "Nauka", "Ekonomika i organizatsiya promyshlennogo proizvodstva", 1981

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## MOTOR VEHICLE

### BASIC CHALLENGES OF TRUCKING INDUSTRY OUTLINED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian  
No 4, 1981 pp 30-32

[Introduction to articles: "Interdepartmental Problems — the Formation and Use of the Truck Fleet"]

[Excerpt] The key problems of the automotive industry have been defined with due regard for the prospects of development of the transportation system. These key problems are the following:

- a. Accelerated development of the production of trucks with diesel engines;
- b. Incorporation of the production of new highly efficient mining dump trucks with extremely large load capacities, general-purpose dump trucks, and buses with diesel engines;
- c. Increase in the production of trailers and semitrailers for tractor-trailer units;
- d. Increase in the fuel economy of internal combustion engines through design improvement;
- e. Expansion of the production of trucks with loading-unloading equipment, container trucks with load capacities of 20 and 30 tons, refrigerator trucks, tankers for petroleum products, and vehicles for hauling live-stock, poultry, and liquid mixed fertilizers;
- f. Development of designs and organization of series production of special vehicles and tractor-trailer units with good off-road capability for agricultural use;

- g. Development of designs and initiation of the production of small electric trucks with efficient sources of current for urban hauling;
- h. Increase in the production of spare parts for motor vehicles to meet repair and operating needs.

Before these decisions were adopted there was vigorous discussion of the program for development of the transportation complex. One of these discussions was held at the initiative of the editors of this journal. We are today publishing material concerning pressing problems of efficient formation and use of the truck fleet. In our opinion, this material is a natural continuation of the topic of the basic directions of development of the infrastructure of material production (see EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA, 1981, No 1).

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CSO: 1829/265

## RAILROAD

### FINES FOR EXCESSIVE RAILROAD CAR DOWNTIME NOT EFFECTIVE

#### Excessive Car Downtime Allowed

Moscow GUDOK in Russian 24 Apr 81 p 2

[Article by G. Zamodenova, chief of the Chu headquarters of the Komsomol Searchlight group, M. Izatov, secretary of the Komsomol bureau of the road section, and T. Milekhina, siding engineer, Chu: "A Fine Is More Profitable"]

[Text] It would seem to be clear that the quicker you unload a railroad car, the quicker it will be ready for loading again. Unfortunately, not all managers of enterprises, sovkhozes, and kolkhozes understand this simple truth. Many of them have a blatantly selfish attitude toward transportation and say, just get me empty cars! They have no interest in where they come from.

The people's control workers and members of the "Komsomol Searchlight" group of the transportation enterprises in the Chu transportation center are fighting this attitude toward rolling stock. But, if the people's control groups and Komsomol Searchlight Headquarters of the sovkhozes, kolkhozes, plants, and other organizations that use rail services would also join this important work, railroad car downtime could be sharply curtailed.

It is the sovkhozes who most often delay cars for unloading. For example, in 1980 a total of 41 railroad cars were delivered to the Aydarlinskiy Sovkhoz. Thirty-one of them were down for more than the scheduled time resulting in a total loss of 1,145 hours. The sovkhoz was fined 2,537 rubles for this. The Chkalov Sovkhoz delayed one car out of four, but the delay was 189 hours and it paid a fine of 501 rubles! These sovkhozes did not start the new year any better. Despite numerous notices, the Chkalov Sovkhoz held up a car carrying salt for 12 days, and three cars carrying mixed feed were down for 57 hours beyond the established time at the Aydarlinskiy Sovkhoz.

The Chu Sugar Plant has considerable losses of loading resources. It takes several days to load an empty car. Although the loading area permits processing eight cars at one time, they usually load just one. When Comrade Niyetbayev, chief of the transportation shop, was asked, "Why don't you use all your machinery to load the cars?" he simply answered that there were no workers.

Our inspection brigade came to the conclusion that the mutual relations that have been established between the railroad station and its clients provide no incentive to enterprise and sovkhos managers to improve the work of transportation shops and brigades in loading and unloading cars or to enlarge the loading areas. Moreover, for some of them who have not managed to organize the work properly, it is much more profitable to pay enormous fines for above-norm car downtime than to build storage areas, introduce progressive methods of packaging output, and expand and mechanize transportation shops. It is less trouble, and the money...does not come out of their pocket!

We propose that managers be held to greater personal material accountability for the use of railroad cars.

#### Kazakh Railroad Downtime Problem

Moscow GUDOK in Russian 24 Apr 81 p 1

[Article by V. Dekhtulinskiy, senior legal advisor of the Kzyl-Orda section of the West Kazakhstan Railroad: "Not Out of Their Pocket"]

[Text] In the first two months of the current year organizations have paid 397,000 rubles in fines for failure to comply with established norms for railroad car downtime during loading operations on the tracks of the stations of the Kzyl-Orda section of the West Kazakhstan Railroad. And railroad transportation enterprises accounted for a significant share of this amount. For example, cars carrying freight addressed to the Kzyl-Orda unit of the track were down about 55 hours for loading compared to a norm of 8.8 hours, and rolling stock downtime at the local department of worker supply was almost six times the norm. For this violation the organizations paid fines, respectively, of 2,547 rubles and 1,238 rubles.

Loading-unloading work has been poorly organized at the Chilli and Kazalinsk locomotive depots, where downtime is just as great.

The situation is made even worse by the fact that output unloaded near the track stays there for a considerable time, hampering operations.

Such mismanagement is expensive. But it appears that this does not upset the managers very much. After all, the fines do not come out of their pocket.

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## RAILROAD

### DELIVERY OF COAL REMAINS SERIOUS PROBLEM

Moscow GUDOK in Russian 2 Apr 81 p 1

[Article: "Coal Shipments: The Main Factor Is Regulation"]

[Text] Spring has arrived in full force, warming most of the Soviet Union. But the problem of shipping coal is no less acute. Electric power stations, ferrous and nonferrous metallurgical plants, and chemical combines require hundreds of thousands of tons of coal every day.

Unfortunately, the organization of the loading and shipping of coal leaves much to be desired. In March against an additional assignment of more than 3 million there was an undershipment--the basic plan fell short by 700,000 tons. It is true that the assignment was overfulfilled by the Moscow, L'vov, Pridneprovskaya, Zabaykal'skaya and several other railroad lines. But this did not make up the undershipment that occurred on the three key coal railroad lines--the Donetsk, Kemerovo and Tselina.

The Ministry of the Railways in recent days has categorically required the managers of the coal-loading and traffic control lines to restrict the use of gondola cars to coal. This is an extreme measure, but it is necessary. How do the commanders react to the ministry's requirement? On the Donetsk railroad on just 3 days, the 27th, 28th and 29th of March, nearly 16,000 gondola cars were loaded with various cargoes; at the same time there was a shortage of 3,500 cars for transporting coal. On 27 March on the Kemerovo railroad 8,332 gondola cars were loaded--233 cars more than the norm, but only 41 coal cars more than the plan. On subsequent days the undershipment of the total plan was 78 gondola cars, but for coal it was 330!

Things are even worse on the traffic control railroad lines. Every 24 hours the Donetsk, Kemerovo and Tselina railroads must receive 10,300 empty gondola cars from the traffic controller. This means that more than 50 percent of the total volume of coal loading on these railroad lines is to be put into a regulated empty railroad car. But in March the Donetsk railroad underreceived 700 gondola cars each day. The Tselina railroad was short 350 cars and the Kemerovo railroad 325. The traffic control railroads during this time period were using gondola cars to transport their own cargoes, fully aware that this was leading to the nonfulfillment of the traffic control assignments. For example, on the Sverdlovsk railroad on 29 March they loaded 4,661 gondola cars--111 above the norm. But according to the traffic control on this date the railroad released only 453 empty cars against a

norm of 800. Even more flagrant violations of traffic control discipline are permitted on the Southern Ural railroad. The Far East, Azerbaijan, Odessa and Moldavian railroads are not fulfilling their traffic control assignments.

In April coal loading must be increased against that achieved in March by more than 1,200 gondola cars per day, of which the majority are to be supplied to the Donetsk, Tselina and Kemerovo railroads. It is necessary from the first days of the month that the traffic control assignments be fulfilled. This is the basic condition for the solution of this critical task--organizing the uninterrupted shipments of fuel. Traffic control discipline must be strict.

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## RAILROAD

### COAL SHIPMENTS DELAYED BY LACK OF CARS

Moscow GUDOK in Russian 8 Apr 81 p 1

[Article by M. Uvarov, deputy chief of the railway traffic service: "Donbass-- Coal in Heaps"]

[Text] On the Donetsk railroad the year got off to a good start. The railroad workers achieved good results in the competition to greet the 26th Party Congress-- within 2 months consumers received 610,000 tons of coal in excess of the plan. The exchange of trains with neighboring railroad lines went smoothly, and the turnover of cars occurred faster than the assigned .8 of a 24-hour period.

With this surplus the railroad line entered the final month of the quarter. March was expected to be more difficult because the assignment for shipping fuel had been increased by 15 percent. The conditions for fulfilling the assignment were: there was enough coal, and it was only necessary to increase the supply of empty cars on a regulated basis. But just the opposite took place: as of 1 March we had received 700 fewer gondola cars than the February assignment.

We tried to compensate for the shortage of empty cars by improving the distribution and unloading of local railroad cars and by speeding up the processing of trains. But the first disruption was followed by a second and third. It was the same story every day until by 19 March the railroad line had under-received 2,867 gondola cars. The coal-loading points began to operate on half-shifts, and the pace of work was disrupted in supplying the metallurgical plants. The losses in shipping resources amounted to 68,300 gondola cars. The January and February surplus quickly disappeared. By the end of the quarter 1,270,600 tons of coal had not been shipped.

The start of the second quarter brought no special changes. Every 24 hours the Donetsk railroad under-receives hundreds of gondola cars as regulated. During the first 5 days of April the amount of coal to be shipped increased by more than 1 million tons. Of course, we also must take some of the blame: losses of shipping resources were significant due to nonfulfillment of the norm of the sector speed by 1.3 kilometer, schedule violations, and crash work at the end of the 24-hour period.

Very soon we will eliminate the shortcomings under our direct control. But the main hindrance is the shortage of empty cars that we receive from the traffic controller.

Thus, in March the Odessa and Pridneprovskaya railroads failed to supply us with 11,700 empty gondola cars--more than half of the total shortage. Because of this nearly 1 million tons of coal still remains in heaps.

## RAILROAD

### RAILROADS FAIL TO FULFILL FIRST QUARTER TIMBER SHIPPING PLAN

Moscow GUDOK in Russian 26 Apr 81 p 1

[Article: "One of the Important Types of Freight"]

[Excerpt] One of the important tasks of railroad shipping at the present time is to improve the transportation of timber. The plan established for 1981 is substantial. The railroads are to increase timber shipping by more than 33 million tons over 1980. The bulk of the work falls on six roads, the Northern, Sverdlovsk, Gor'kiy, October, Krasnoyarsk, and East Siberian roads. They account for more than 70 percent of the overall plan. But all roads must be concerned about shipping timber. Specifically, the Moscow road ships about 4 million tons of timber each year, as does the Kemerovo road, while the L'vov road ships 3.5 million tons.

It is gratifying that the collectives of many main roads successfully met their plans for the first quarter of the year. Seventeen roads overfulfilled their shipping plans, among them the Belorussian, Moscow, North Caucasian, West Siberian, Transbaykal and Transcaucasian roads. Nonetheless, the overall assignment was not fulfilled; the plan was just 88.3 percent performed. The roads that let us down were the East Siberian, Northern, Gor'kiy, and Sverdlovsk roads. Some 1,000 cars a day were not loaded because the railroads failed to deliver them on time for loading, while 1,300 cars a day were not loaded through the fault of the timber industry. The control assignment is also being handled poorly. Take the Northern road for example. Of course, it must be admitted that this road has many difficulties with unloading cars, but its neighbors are doing poorly too, especially the October road, which consistently violates the assignment for turning over empty cars.

The situation is no better on the Gor'kiy road. Each day 174 cars are not loaded through the fault of the workers and 175 more are not loaded through the fault of allied organizations. Now let us take the Krasnoyarsk road. In April it is fulfilling its plan for total timber shipment each day, but nonetheless the road experiences a shortage of 200 cars a day.

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## RAILROAD

### ROLLING STOCK URGENTLY NEEDED TO HAUL AZERBAIJANI EARLY VEGETABLES

MOSCOW GUDOK in Russian 1 Apr 81 p 1

[Article V. Dimitrov, Baku: "Cars for Vegetables Are Needed"]

[Text] The agricultural workers of the subtropical zone of Azerbaijan have raised a rich harvest of early vegetables. Weather conditions accelerated the ripening of the cabbage, and it has already begun to be shipped to the industrial centers of the country. In the first days of April all the railroad workers of the republic will be switched to vegetable shipping; they must transport the bulk of the output from our vegetable farmers.

In recent years the busy season for rail shipment of vegetables began in late April or early May. And although the workers of the line did a great deal so that this important time would not catch them unprepared, there is cause for alarm today. Whereas in former years the road began to form its reserve of refrigerator cars ahead of time and usually had more than 6,000 cars before the start of large-scale cabbage shipping in May, this year the cars should have been stockpiled almost one month earlier. But at the start of the last third of March the road had only slightly more than 600 cars.

To correct the situation it is essential that at least 400 cars a day be sent to the Azerbaijani line now. They should arrive here in through trains and be fully ready to be turned over for loading, or the road will not be able to handle the job of preparing empty cars for vegetables. The transfer of diesel engines to the road must also be accelerated. It is true that five switch engines were recently received, but twice as many are needed, in addition to train diesel engines, water supply machines, and materials and spare parts to equip and repair the rolling stock. Everything must be in place by the time that large-scale vegetable shipping begins.

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## RAILROAD

### BRIEF

MURAPTALOVO-ORENBURG LINE OPENED—Ufa—Working traffic has begun on the new railroad line between Muraptalovo and Orenburg. This line will improve communication between the Bashkir ASSR and Orenburgskaya Oblast and significantly shorten the route for products from petrochemical enterprises in Bashkiria that are being sent to Central Asia. The collectives of the Orenburgtransstroy [Orenburg Transportation Construction] and Ufimtransstroy [Ufa Transportation Construction Trusts] and the subcontracting organizations, after laying the final link to connect the two segments into a single line near Prody junction, held a short meeting to celebrate the victory. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 16 Nov 80 p 1] 11176

## OCEAN AND RIVER

### RIVER TRANSPORTATION WORKERS FACE MAJOR CHALLENGES IN 1981 SEASON

Moscow VODNYY TRANSPORT in Russian 4 Apr 81 p 1

[Editorial: "Shock Labor by River Transportation Workers in the New Five-Year Plan"]

[Text] Among the key national economic challenges of the 11th Five-Year Plan the 26th party congress singled out the task of improvement and further development of all forms of transportation. The goal formulated was to insure complete and timely satisfaction of national economic and individual transportation needs and to improve the efficiency and quality of work by the entire transportation system.

The water transportation workers of the Russian Federation, the Ukraine, Kazakhstan, Belorussia, Moldavia, and the Baltic republics must perform a significant volume of cargo shipping and passenger conveyance. Thus, the river workers of Russia alone are to increase the cargo turnover of the fleet by 19.8 percent in the current five-year plan compared to the 1980 level. This includes a significant increase in dry cargo, the most labor-intensive form of shipping. Its share of total shipping volume will reach 82-83 percent, while cargo turnover rises 24 percent. Shipping on the rivers of Siberia, the Far East, and the Far North will develop at a faster rate. In the present year, for example, the delivery of cargo to these regions by the river fleet will increase 23.6 million tons by volume and 16.8 billion ton-kilometers by cargo turnover, which is far more than the actual indicators for 1980. This is a very large and important task.

To meet this challenge it is necessary to improve management of the transportation process by every means, raise all operations work to a new level, and minimize unproductive losses of fleet traffic capacity. Last year shortcomings in the operations activities of the steamship lines of the Ministry of the River Fleet were the reason that the sector did not reach the five-year plan level for cargo turnover, labor productivity, and prime cost of shipping. A disturbing situation with plan fulfillment is also taking shape in the current navigation season because clients have not presented a number of the most important cargoes for shipping.

The decree of the CPSU Central Committee and USSR Council of Ministers entitled "Steps To Develop River Transportation in 1981-1985," posed the challenge of switching more than 33 million tons of various types of cargo from the railroads

to water transportation during the five-year plan. This is an important and responsible task. At the present time, however, no significant changes are being observed in this important matter. The managers of various steamship lines, the Kama, Northern, Western, and White Sea-Onega lines, are doing very little to find new shipping possibilities and switch shipping to river routes. The specialized scientific institutions such as Giprorechtrans [State Planning Institute for River Transportation], TsNIIET [Central Scientific Research Institute of the Economics and Operation of Water Transportation], and Sibgiprorechtrans [possibly Siberian State Planning Institute for River Transportation] are not doing well here either. Meanwhile, experience reveals that cargo shipping in direct, mixed rail-water transportation is decreasing, not increasing. In 1980 it declined almost 2.5 million tons compared to 1979. The main administrations of the ministry, cargo services, and economic planning departments of the steamship lines must study the regional economies, assume responsibility more straightforwardly, and switch various important cargoes from the railroads to water.

In the current five-year plan the gross productivity of the cargo fleet should increase six percent compared to the 4.1 percent achieved in recent years. It is essential to find new reserves for increasing the traffic capacity of the fleet and to put them into action. It will be difficult for river workers to meet their stepped-up plans unless this problem is solved. In the 10th Five-Year Plan the plan assignments for gross productivity were not fulfilled by a single branch of the fleet. Furthermore, the gross productivity of dry-cargo ships of the Yenisey, East Siberian, and Amur steamship lines in 1980 dropped by 10-12 percent compared to 1975. The use of the tanker fleet of the Volga Tanker Steamship Line declined seven percent in the last five-year plan. The gross productivity of cargo motorships also dropped in the Volga Unified Steamship Line. The principal explanation for such unsatisfactory use of the fleet is that ship downtime for processing and waiting time per ton of cargo transported have remained at the 1975 level although the docks have considerably more machinery. The percentage of dry (empty) runs is still large. The figure rose from 15.2 to 17.5 percent in the 10th Five-Year Plan. The managers and specialists of the steamship lines must do everything possible to reduce empty runs by the fleet and organize the work to minimize ship downtime waiting for loading operations.

The institution of the new schedule statute in the 1981 shipping season, providing for planning fleet dispatching by the calendar, should improve the rhythm of ship traffic and reduce downtime waiting for loading operations. The time is now here to make one more check of preparations for work under the new statute so that the transportation system can start operating smoothly from the very beginning of the shipping season.

It is difficult to imagine an improvement in the indicators of fleet use without the continued spread of progressive labor methods. This means, above all, large-capacity trains of vessels. This method affords the greatest output per motorship, raises labor productivity, and improves various economic indicators. The advantages, as they say, are obvious. Unfortunately, however, this method has still not become widespread in the river steamship lines. Another progressive method of organizing shipping that has not spread properly is having motor-driven freighters, including Volga-Don ships, push attached barges. Meanwhile, 20 new trains of vessels will be put into use on the rivers in the 11th Five-Year

Plan. It is a key obligation of river workers to use them with maximum efficiency.

Shipping on integrated lines also has great advantages. This was proven by the water transportation workers of the West Siberian Steamship Line. In the last shipping season they delivered more than 16 million tons of dry cargo, which is more than 60 percent of the total volume, to their customers. At the same time the Volga-Don, Volga Unified, and Amur steamship lines have not organized the operation of such lines properly and ship downtime waiting for loading operations increased 13-19 percent. During the current shipping season everything possible must be done to see that the integrated lines work smoothly and productively.

River transportation has enormous opportunities to accelerate the processing of ships and railroad cars. An analysis of work in 1980 showed that 34 percent of the transportation ships were significantly delayed for processing in port and above-norm downtime was 28 million tonnage-days. Fleet processing at the docks of the clients should be given special attention. This is where most of the downtime for transit vessels occurs.

There must be a persistent campaign to take good care of cargoes in order to reach the planned goals. Losses from failure to preserve cargo are still high. Cargo is often spoiled and damaged as the result of accidents, failure to observe shipping rules, violations of procedures for shipping operations, and incorrect storage. Each year the workers of the Lena Unified, Yenisey, Irtysh, and various other steamship lines cause significant losses through failure to preserve cargo.

Stepping up the struggle against all these shortcomings and completing the installation of protective barriers, outside lighting, and reliable signal lights at docks and storage facilities are important jobs for the management bodies and public organizations.

The river workers of the country have a great deal to do in the current shipping season to fundamentally improve passenger conveyance, minimize violations of ship departure schedules, and improve service to passengers. The managers of the steamship lines and specialists responsible for organizing passenger traffic must do everything possible to completely meet all the needs of Soviet people so that even more of them will want to spend their vacations on enjoyable river cruises.

A great deal of work is to be done this year on the water routes. River route workers have done a great deal in past years. In a short time they have created all necessary conditions for normal operations on the Lena, Kirenga, and numerous tributaries of the Irtysh and Ob' which are used to ship cargo to the petroleum extraction enterprises in West Siberia. They have improved navigation conditions on the Volga-Baltic and White Sea-Baltic canals. Nonetheless, accidents for which river route workers are to blame are still too frequent. The managers of the basin route administrations should be working right now to significantly improve the organization of route work, to make maximum use of all available bottom-dredging machinery, and to see that the navigation support services operate precisely.



The new shipping season will be an especially demanding test for river ship repair workers. During these spring days they must precisely carry out all projects envisioned by the directive schedule to turn over the fleet in good operating condition. No violation of this schedule should go unnoticed. The work must be organized so that all ships are ready to sail.

Industrial enterprises face important challenges. In 1981, for example, the river workers of Russia must build 316,000 tons of tonnage for the self-propelled and non-self-propelled fleets. New tugs and pushboats will also go to work on the rivers. This will demand a whole program of steps to improve the organization and upgrade the technology of new ship building. This program should be based on broad use of mechanized equipment, organizing flow lines in semifinished part sections and assembly, specialization and collaboration among enterprises, and supplying shops with the latest equipment with programmed control. The Ministry of the River Fleet has already done a great deal to build up shipbuilding capacities, but still this work is going slowly. The specialists at scientific institutions concerned with river transportation should make an important contribution here.

The current five-year plan should be truly decisive with respect to stepped-up improvement of ship repair work. The main thing here is to switch ship repair from the caravan to specialized shops and sections which have highly productive equipment, special test stands, and a high level of mechanization. The progressive aggregate method of repair will also be used extensively.

The party congress emphasized that the economy must be economical. What must river transportation workers do to achieve this? Above all, they must use material, labor, and financial resources efficiently and achieve greater results with fewer expenditures.

The volume of fuel consumption by ships of the Ministry of the River Fleet is very high. The fleet uses more than 4 million tons a year. In 1980 river shipping used 35,000 tons more fuel than the established norm. The basic reason for this was unsatisfactory use of the transit fleet, but there were also shortcomings in maintenance and technical operation of vessels. In ship repair and new shipbuilding there were cases where excessive amounts of rolled ferrous metals, expensive electrical equipment, and other materials were expended. These shortcomings must be eliminated quickly. Further, we must work out and introduce measures to reduce expenditures of material resources and hold those who permit waste of fuel, metal, materials, and equipment strictly responsible.

Concern for production needs is inseparable from concern for the needs of the workers. Unfortunately, several river steamship lines for some reason forget this fact on occasion, and the result, of course, is high worker transience. The situation is particularly troublesome at enterprises of the Volga Tanker, Amur, Yenisey, and Irtysh steamship lines, and certain others. Their managers have been criticized severely many times for making mistakes in work with personnel. But the situation is not changing and the problem continues: each year the sectors need thousands of new employees. In the current phase, measures to train workers at the work positions will be exceptionally important. This is the most realistic source of additional personnel for the fleet and the ports.



The shipping season of the first year of the 11th Five-Year Plan is getting under way. It will be a very intense and important one. The goal of the ship's captains, port workers, dispatchers, and employees of the commercial services of the steamship lines is to see that the river transportation system works smoothly, without interruptions.

The resolutions of the 26th party congress are a fighting program for each river transportation collective. May the flame of labor initiative burn brighter in each one of them! May competition under the slogan "Work Efficiently and Well!" develop and broaden.

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RSFSR GEOLOGISTS RELY ON SUPPORT OF RIVER TRANSPORTATION WORKERS

Moscow VODNYI TRANSPORT in Russian 4 Apr 81 p 2

[Article by deputy RSFSR minister of geology S. A. Shaydurov: "We Have the Same Goal"]

[Text] The first Sunday of April each year is celebrated as Geologist's Day, the traditional holiday of those who explore the earth's interior in the Soviet Union. Each year our geologists discover dozens of mineral deposits and build up the country's mineral and raw material base.

Geologists are moving further and further to the north and east in their difficult, unselfish search. River transportation has a significant role in this movement; without it the development of new regions would be unthinkable. Deputy RSFSR minister of geology S. A. Shaydurov tells in the article below of the work of Russian geologists and their cooperation with river transportation workers.

The Soviet Union is the only industrial nation in the world that bases the development of its economy on its own mineral resources. Considerable credit for this goes to the geologists of the Russian Federation whose sphere of operations includes two-thirds of the country.

The geologists of Russia worked hard in the past five-year plan. A great deal was done to raise the efficiency and quality of geological exploration and improve the system of material-technical supply. It is common knowledge that the development of our economy is based on large territorial production complexes. Therefore, the job of the geologist has been and is to establish reliable mineral and raw material bases for such complexes as the Timan-Pechora, West Siberian, Noril'sk, South Yakut, and others. Meeting these challenges requires an intensification of geological exploration, development of the technical means of the sector, and a precise, smooth-operating system to supply geologists with everything they need.

The total contribution of Russian geologists to growth in the country's minerals rose almost one-third compared with earlier five-year plans. Dozens of new deposits of petroleum and gas were discovered, the most significant being in West Siberia.

We face even greater challenges in the 11th Five-Year Plan. The decisions of the 26th CPSU Congress direct us to broaden the scale of prospecting even further, especially in West Siberia, the European North, and the eastern regions. In 1981 alone, the volume of geological exploration work will increase 14 percent compared to last year, including 22 percent for deep drilling. As already observed, the expansion of work in remote regions creates a number of problems. One of the most important ones is organizing uninterrupted supply to geological subdivisions. Given the lack of roads and the short shipping season, the river fleet has a special role in this. It is the primary form of transportation during the summer. River workers give us enormous help, delivering national economic cargo to inaccessible regions by water. The volume of this shipping increases each year. In the 1979 shipping season, for example, four river steamship lines, the Irtysh, Yenisey, Lena, and Pechora, shipped 950,000 tons of cargo for geological organizations, and last year the figure was already 1.4 million tons. An even greater volume is planned for this year.

The Irtysh River Steamship Line has the lion's share of the shipping. It delivers supplies to the petroleum prospectors of West Siberia, where half of all the country's petroleum is now extracted. In the coming five-year plans this region will remain the principal supplier of fuel-energy resources to the country. Therefore, the petroleum geologists of Glavtyumen'geologiya [Main Administration of Geology for the Tyumen' Region] are increasing the volume of deep drilling and expanding the search for new deposits each year. Last year the workers of Tyumen' reached a portentous goal for the first time. They drilled 1 million meters, and considerable credit for this goes to the river workers, who fulfilled their shipping plan. In 1980 the workers of the Irtysh Steamship Line shipped 978,000 tons of cargo, 270,000 tons more than in 1979. As a rule ships are loaded and unloaded on time, following a schedule developed jointly by the geological organization and the steamship line.

The annual joint order of the ministries of the River Fleet and Geology on the organization of shipping and transshipment work for Glavtyumen'geologiya promotes business-like relations between river transportation workers and geologists. Unfortunately, there are still cases when certain points of the order are violated and unforeseen delays, which hamper the work so much, occur. Some times river workers deliver barges for unloading at an uneven pace: first there are none at all, then suddenly a whole fleet arrives. Of course we cannot unload them all on time, and the result is wasted time and mutual complaints.

The operating regions of our geologists are expanding. Prospectors are moving further and further away from the large rivers, and helicopters do not have the ability to deliver heavy equipment. It is very essential to equip the river fleet with shallow-draft ships that can sail on small rivers. This will have an enormous impact. The shortage of river-sea-going ships also causes us concern. The need to transship materials and equipment before they reach their destination causes too many irrational expenditures.

We need the help of river workers to solve the problem of assembling gantry and floating cranes and barges that come to us in disassembled form. The geologists do not have either the production capacities or the specialists for such work,

and as a result the assembly process drags out for 2-3 years. We have asked the RSFSR Ministry of the River Fleet for help, but have not yet received an affirmative response.

Our potential is also limited by the fact that river workers do not have specialized tanker ships to carry gas condensate fuel in liquid form. It is impossible to ship it in other forms of transportation.

There are shortcomings on our side too. Ships are not always unloaded on time owing to the shortage of labor and machinery. Not all our harbors are equipped with up-to-date cranes and docks for unloading heavy cargo. There are problems with the organization of transshipping cargo from rail to water transportation.

We have shortcomings, but we are working hard to overcome them. Each year we are building new 40-meter docks and pipelines that go out to the roadstead on pontoons. We are establishing depots to transship cargo from sea-going ships to river ships. We are developing our own river fleet, which increases its shipping volume every year. Last year, for example, geologists shipped more than 1.1 million tons of cargo in their own vessels.

Geologists as well as river transportation workers are preparing intensively for the new shipping season. Cargo has been stockpiled at river transshipment depots and the port equipment is being made ready.

We have the same goal. Successful performance of our plan assignments to continue building's mineral and raw material base depends greatly on how well we work together.

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## OCEAN AND RIVER

### PROSPECTS FOR EXPANSION OF PORT OF BERDYANSK DISCUSSED

Moscow VODNYI TRANSPORT in Russian 4 Apr 81 p 2

[Article by A. Konovalov, chief economist of the Berdyansk commercial seaport: "Does the Port Have Future Prospects?"]

[Excerpt] More than 150 years ago the Berdyansk seaport was established in a very convenient bay protected by a long spit running far out to sea. Before long the initially small harbor became a place of shelter against storms and ships came in there for the winter and for repair. For this reason the port grew rapidly in importance. It is not accidental that there were times in the history of the port when its volume of export cargo shipped exceeded even that of its immediate and (today) much larger neighbor Mariupol', which is today the port of Zhdanov.

There came a time when this pattern, which resulted from the convenience of the harbor, was set aside. There is reason to remember it today, especially because even in the coldest winters pack ice does not reach this harbor because of the spit. Of course, the city of Berdynansk, unlike Zhdanov, has developed chiefly as a resort town, especially in recent years. But this is precisely what puts further development of the port of Berdyansk on the agenda.

The port today is a large transportation enterprise that successfully performs its assignments. Reconstruction of the port and the bottom-dredging work that has been done make it possible today to receive and process ships with significant drafts. Modern ships with horizontal loading operations now work on the Berdaynsk — Misratah (Libya) line.

The port's future prospects are even more solid. But there is a problem: it is in the center of the Berdyansk resort zone. That is, the port area is closed in by the city and has nowhere in which to expand. For a contemporary first-class port whose cargo turnover has passed 2.5 million tons year, of course, this means just one thing: further development of the port must start. But would this be correct? These are by no means idle questions for our colleagues.

A. Belodvortsev, chief of the Volga-Don River Steamship Line, visited the port of Berdyansk in mid-1980. He was interested specifically in the prospects and possibilities of transshipping construction and bundled lumber through our harbor for Donetskaya, Dnepropetrovskaya, and Zaporozhskaya oblasts. To this day the lumber is shipped from the forest industry enterprises by rail because neither



Zhdanov nor Berdyansk is able at present to unload lumber delivered, for example, by the river-sea-going ships of the Volga-Don line.

At first glance it seemed that there was no answer. But after a careful study of the matter we found one. It is important to emphasize that the resorts will not suffer in any way from the solution which we are proposing.

The Berdyansk Azovkabel' Plant once built powerful shore-reinforcement structures. A new cargo-handling area could be set up at this place. It would then be outside the city's resort zone. Its construction would cost half as much as building on a completely undeveloped site: just 2 million rubles instead of 4 million. This large area is easily sufficient to hold warehouse facilities and a lumber transshipment depot. With proper equipment the port could handle 600,000-800,000 cubic meters of lumber a year here, which is precisely the amount which the Volga-Don River Steamship Line is capable of carrying.

Plans and drawings of the new cargo-handling area have been developed on the basis of working drawings of the shore reinforcements near the Azovkabel' Plant done by the Ukryuzhgidrokomnumstroy [possibly Ukrainian State Planning Institute for Municipal Construction in the Southern Regions] and the plan for future development of the city of Berdyansk. These plans and drawings have been coordinated with the party and Soviet bodies of the city. The approximate cost of the dock is 2 million rubles.

In addition to lumber it will be possible at the same time to process bulk cargo in this area. It is noteworthy that construction of the new cargo area will pay for itself in 3-4 years. Incidentally, it will make it possible to free the existing docks for transshipment of general export-import cargo, which is growing in volume every year. This kind of specialization will greatly speed up the processing of ships and railroad cars, which we consider a key challenge.

The collective of the port understands very well that construction of the new cargo-handling area is not an easy matter. This is true primarily because it is not a planned measure. In other words, the Ministry of the Maritime Fleet will hardly be able to appropriate 2 million rubles in the 11th Five-Year Plan. For this reason our port has proposed getting the money on contract principles from the oblasts that have an interest in the lumber shipping, Donetskaya, Dnepropetrovskaya, and Zaporozhskaya oblasts. Their contribution is not small, of course, but it is not beyond their capacities: 500,000 rubles from each oblast. Bottom-dredging work and construction of the approach canal can be handled by the port under planned expenditures for bottom dredging.

From the state point of view the economic wisdom of building a new cargo-handling area in the Berdyansk seaport is obvious and indisputable. This is a matter, first of all, of switching a large amount of lumber shipping from rail to water transportation. This subject is explicitly mentioned in the "Basic Directions of Economic and Social Development of the USSR for 1981-1985 and the Period Until 1990": "As much as possible, where expedient, switch freight shipping from rail to river transportation." It is also important that the potential of the convenient port of Berdyansk will be used more fully.

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## OCEAN AND RIVER

### FINNISH YARD BUILDS NEW RESEARCH SHIPS FOR USSR

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[Article by V. Borisov and B. Georgiyev: "The Akademik Shuleykin, the Akademik Shokal'skiy..."]

[Text] The development of our country's economy, in particular the North and Far East, and the development of reliable methods of forecasting weather and the navigation situation on navigation routes demand a knowledge of the hydrologic and ice conditions of the seas and their interaction with the atmosphere. The multifaceted activities of the expeditionary fleet of the USSR State Committee for Hydrometeorology plays an active part in solving many important scientific and practical problems. The fleet will soon receive some new ships.

The Finnish company Laivateollisuus in the city of Turku has built five scientific research vessels at its shipyard on order from the Soviet Union. These ships are designed for comprehensive study of the world ocean with respect to hydrometeorology and environmental monitoring. They will be able to operate in the tropical and polar latitudes. These ships can sail in any region and have an augmented ice rating. Each ship has a displacement of 2,000 tons, a 3,200-horsepower engine, a traveling speed of 14 knots, the ability to operate independently for 50 days, and a sailing range of 15,000 miles without visiting ports.

The crew and scientific personnel of an expeditionary motorship will include 66 seamen, scientists, and specialists. They will have at their disposal up-to-date machinery, devices, and systems, navigation and radio communications equipment, and 12 laboratories (among them hydrologic, meteorological, aerological, hydrochemical, and synoptic laboratories). The ships have central control posts for scientific observations, automated units for collecting and processing incoming information, and buoys that contain oceanographic and meteorological instruments.

The new scientific ships have been named in honor of outstanding Soviet scientists who made major contributions to the formation and development of Soviet oceanography. The first in the series will be the motorships Akademik Shuleykin and Akademik Shokal'skiy. The name of V. V. Shuleykin, a founder of marine physics,

is linked to major studies in the field of thermal interactions between the ocean, atmosphere, and land and expeditions to the Arctic and Atlantic. The Black Sea hydrophysical station in Crimea, which still exists today, was established at his initiative, as was the Marine Hydrophysical laboratory in Sevastopol', which later became an institute with the same field of study.

In his works honored academician Yu. M. Shokal'skiy demonstrated the close inter-relationship among processes and phenomena occurring in the ocean and the atmosphere. He headed projects to compile general geographic, marine, and other types of maps and worked on the problems of studying and developing the Northern Sea Route. His memory is preserved in the placenames of 12 geographic points in the Arctic and Antarctic. The other three ships have been given the names of Professor P. A. Molchanov, who laid the foundations of domestic aerology; Honored Scientist of the RSFSR S. P. Khromov, the inventor and designer of the world's first radiosonde who holds a significant role in the formation of the Soviet school of synoptic meteorology; and, Professor B. P. Mul'tanovskiy, who worked on development of improved methods of long-range weather forecasting.

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